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Subject: Existing Bay Area Parking Policies – Technical Paper

TASK 2 - TECHNICAL PAPER – EXISTING BAY AREA PARKING POLICIES

This paper presents a review of the existing parking policies and practices of Bay Area cities. It consists of four sections:

- Section I: Standardized National Parking Guides And Manuals
- Section II: Commonly Used Bay Area Parking Policies
- Section III: Local Parking Programs Pertaining to Infill, TOD and Downtown Development
- Section IV: Understanding and Addressing Parking Issues And Concerns

SECTION I: STANDARDIZED NATIONAL PARKING GUIDES AND MANUALS

The many of the parking policies in use today are based on the information from a series of accepted manuals and guides that have been put together by the nation's leading authorities on parking. Several of these resources such as the ITE's *Parking Generation*, the National Parking Association/ULI's *The Dimensions of Parking*, the respected Robert A. Weant and Herbert Levinson *Parking*, and the ULI's *Shared Parking* are coordinated but rely on different sources of information. As such, the following section will review and highlight the key ideas presented in the publications mentioned above.

Background

Since the 20th Century, notably after the World War II, zoning became one of the key organizing principles used by cities in developing guidelines and standards for its municipality. At that point in time, zoning was regarded as the principal means of ensuring community development in accordance with its planned objectives. It was during the 1960's and 1970's that parking spaces needs were linked to various land uses[1]. Consequently, general parking generation rates were developed which were followed by municipality governed parking requirements. These generation rates were further supported by parking case studies conducted for individual land

[1] *Local Government Parking Policy and Commute Trip Reduction, 1999 Review.* Washington State Department of Transportation.

uses at a local level throughout the nation. The studies generally entailed field observations which documented the estimated the accumulation of vehicles parked at a given time as a result of activity at a given site or the "parking demand" of the use. The observed parking demands were recorded to reflect the maximum accumulations during the average day, peak day of the week, or during the peak season over the course of a year. In 1976, the results of these studies were then compiled, reported, and published by the Institute of Transportation Engineers (ITE) in their reference guide, *Parking Generation*. The ITE statistical information is intended to be used to develop parking demand rates. These rates determine the amount of parking which would be generated by a specific land use. This particular guide has served as one of the authoritative sources in estimating parking demand and equally important in forming the basis of parking policies due to the extensive value of data it presents.

Institute of Transportation Engineers' (ITE) *Parking Generation*

From its initial publication of *Parking Generation*, ITE has since made two subsequent revisions to the guide in 1987 (Second Edition) and most recently in 2004 (Third Edition). Acting as an informational report, *Parking Generation* includes statistical case study information such as average peak parking demand, the peak period of parking use and the number of vehicles reported per unit of a particular land use category (i.e. number of attendees, employees, gross floor area, etc.). ITE uses, at minimum, two independent case study sites as a data source for each land use category. The data is then processed as independent variables that can predict the value of the dependent variable in this case, parking demand[2]. This information is then plotted and charted onto a graph to be used as a statistical guide to assess parking demand. Note that the parking demand graph presents various measures such as standard deviation, range of rates, and the 85th and 33rd percentile. These measures could then be post processed by the user to develop their own parking demand assessment.

In general, *Parking Generation* provides background information such as a land use description (type of use), a database description (how the parking demand information was obtained), where the data was collected (study site), the year the data was collected and any other additional data which would allow the reader to develop assumptions for the rates. The parking demand ratios for each of the uses (example 2.43 vehicles per 1,000 square feet of gross floor area) are presented for the peak period. The following is an example of the data reported in *Parking Generation* for "Land Use: 932: High-Turnover (Sit-Down) Restaurant[3]." The report presents a description of the land use as the following:

> *"This land use consists of sit-down, full-service eating establishments with turnover rates of approximately one hour or less. This type of restaurants it usually moderately priced and frequently belongs to a chain. These restaurants typically do not take reservations and patrons commonly wait to be seated and served by a waitress or waiter, order from menus and pay for meals after they eat…"*

[2] See Chapter 3, *Parking Generation* Institute of Transportation Engineers, Third Edition (2004)
[3] Note that land use codes for ITE*'s Parking Generation*, Third Edition (2004) matches land use codes used for ITE's *Trip Generation*, Seventh Edition (2003).

The parking demand for "High-Turnover Restaurant" is presented with different independent variables such as: by seat or 1,000 square feet of gross floor area, a weekday or Saturday, different peak periods, for a family or non family restaurant, and a suburban or urban location. Table 1 presents an example of parking demand information in ITE's *Parking Generation,* Third Edition (2004) for a High-Turnover Family Restaurant (No Bar or Lounge) in an urban setting.

Table 1
High-Turnover (Sit-Down) Restaurant Parking Demand
Average Peak Period Parking Demand

Statistic	**Peak Period Demand**
Weekday Peak Period	11:00 AM- 1:00 PM; 6:00 PM-8:00 PM
Number of Study Sites	10
Average Size of Study Sites	3,200 sq. ft. GFA
Average Peak Period Parking Demand	5.55 vehicles per 1,000 sq. ft GFA
Standard Deviation	2.690
Coefficient of Variation	48%
Range	3.13-12.41 vehicles per 1,000 sq. ft. GFA
85th Percentile	6.37 vehicles per 1,000 sq. ft. GFA
33rd Percentile	3.86 vehicles per 1,000 sq. ft. GFA

Source: ITE *Parking Generation,* 3rd Edition (2004)

Application for Cities

The table above reports that during the weekday Midday and PM peak periods, the number of vehicles who parked for a High-Turnover Restaurant range from 3.13 to 12.41 for every 1,000 square feet of gross floor area. Based on a weighted curve, this averages to a parking demand of 5.55 vehicles and an 85th percentile demand of 6.37 vehicles per 1,000 square feet of gross floor area. A total of 10 case studies sites with an average size of approximately 3,200 square feet were studied. For cities developing a parking demand for specific uses, there are several key points of information in this table including:

- **Land Use Description** - Cities should first review the specific land use description. As shown above, in some instances ITE land use categories are described in distinct detail (e.g. family restaurant with no bar or lounge in an urban setting). In other instances some cities have uses that are more specific than the case study sites listed in ITE. For example a local coffee house does not have an independent category in ITE, but rather gives a general description, "[Coffee restaurant] facilities served coffee as their primary business and had extremely high turnover rates. The *Parking Generation* database has two sites classified which have not been included in the following data pages [Fast-Food Restaurant without Drive-Through Window]." Although *Parking Generation* provides a weekday peak period parking rate (19.3 and 13.9 vehicles per 1,000 sq.ft. GFA) for

coffee restaurants, the parking demand description is very limited. As such, cities need to identify what ITE land use categories would appropriately match their uses.

- **Day and Time Period** – Another key factor for a city is whether the demand rate is for a weekday or weekend day, and what time period they anticipate the peak occurring in. Unlike the **average** peak hour in which traffic is typically analyzed (typically reviewed in 15 minute increments over the peak hour), peak parking demand refers to a single point in time where the highest number of vehicles would be parked. As such, cities need to identify the peak time period when the highest use of parking would occur for the use. This information is also important to determine if any shared parking demand factors should be applied.

- **Range of Parking Demands** – Once the appropriate land use category, day and time period are identified, cities can use different parking demand statistics to determine which would be appropriate for their analysis. The "average peak parking demand" presents the mean parking demand ratio. This is if all case study site information were weighed equally, then averaged into one parking demand. However, since the case study sites have different square footages (or sizes), services and locations, analysts typically refer to the 85th percentile demand as a guide. This represents a parking demand in which at least 85 percent of the case study sites reported this rate or lower.

  Also note that ITE describes the number of case study sites, the range of parking demands surveyed, and the precision of the results of the data (referred to as the coefficient of variation and the standard deviation). A more accurate parking demand would have a high number of case study sites, a lower range of demands, a smaller coefficient of variation (closer to 0 percent) and a lower standard deviation (less dispersion of data).

- **Application of Parking Demand** – Following the identification of an appropriate parking demand rate or ratio, cities can use this information to estimate the amount of parking individual uses would be generating at a peak point in time. Note that the parking demand presents the peak parking usage without any shared market captivity (e.g. individuals parking and going to more than one use). These parking demands should be applied on a case by case basis for determining new development needs as compared to the cities' parking codes. It should also be noted that very few cities use these ITE demands as a basis for their parking codes.

Given this information, city analysts (planners, engineers, and others) can asses the amount of parking anticipated to be generated by a proposed land use development or the estimated parking demand generated by existing uses. Since each *Parking Generation* edition adds new land use categories (e.g. the Third Edition includes a Home Improvement Superstore and a Continuing Care Retirement Community category), it is an evolving parking resource. It is ITE's intention that this resource will be updated over time and be used as "an informational report – *NOT* a

manual, recommended practice, or standard.[4]" For instance, previous editions of *Parking Generation* tended to rely heavily on case study sites which were often large, isolated, and suburban. This type of approach does not necessarily provide the most accurate data for cities within the Bay Area given the type of development occurring in other parts of the nation. The current Third Edition of *Parking Generation* acknowledges that the statistical information is designed to help the analyst determine "the general nature of parking demand for a given land use where more detailed local studies are needed. This is why land uses with only one or two studies are provided – not as the final determination of parking demand, but as a starting point for analysis.[5]" ITE also recognizes that there distinct area types such as central business district, central city (not downtown), suburban center, suburban rural, for which parking demand varies due to a number of reasons including; transit availability, parking restrictions, and management policies.

National Parking Association/Urban Land Institute's *Dimensions of Parking*

Although ITE's *Parking Generation* emphasizes the appropriateness of land use categories and parking generation rates, other publications such as *Dimensions of Parking* (Fourth Edition) by the National Parking Association in partnership with ULI, focus more on the quality of land use and parking's impact on development. Since city planners and engineers must strive to achieve their communities' overall development goals while addressing and balancing the value of parking, *Dimensions of Parking* can provide a background perspective of the various components that go into making parking investment decisions.

As a joint effort between the National Parking Association and the Urban Land Institute, *Dimensions of Parking* was initially published in 1979. This collaboration has continued through the various trends of parking with the most recent publication occurring in 2000 (Fourth Edition). Given the revised, updated and expanded topics of parking over the years, *Dimensions of Parking* (Fourth Edition) recognizes that "adequate, convenient and affordable parking is of concern to nearly everyone who uses an automobile or is affected by the use of automobiles." In summary, *Dimensions of Parking* emphasizes that the different aspects of parking require detailed analysis and coordinated decision making.

Some of the topics which are described in *Dimensions of Parking* are a review of the analysis tools which help assess parking needs; the potential costs of providing new parking; the development of local land use and zoning requirements; and the elements of functional parking design. These topics can help cities understand the economic value of parking as a basic element of most land uses and the long-term capital investment associated with it. Cities can use *Dimensions of Parking* as a guide to address local zoning requirements as well as the functional design of new parking facilities. *Dimension of Parking* also describes the need of parking studies to understand the adequacy of parking influences on public and private sector investments.

[4] ITE, *Parking Generation*, Third Edition, Page 6 (2004).
[5] ITE, *Parking Generation*, Third Edition, Page 5 (2004).

Another overarching theme of the *Dimensions of Parking* (Fourth Edition) is that no specific manual could be transferable from one locality to another. This resource is to be used as a guide to help assure that parking faculties are properly size, constructed and operated based on the continuity of parking in the community. Since parking varies widely from one location to the next and ranges even among cities of similar size, local community characteristics such as differences in employment densities and the rates of automobile ownership not only affects the parking demand of existing and proposed uses, but can affect the acceptability of implementing new parking facilities. In addition, the dynamics of parking can change over time due to economic, demographic or other changes related to the surrounding land use context.

American Planning Association's *Flexible Parking Requirements*

Given the variability of parking within different communities, the American Planning Association (APA) has developed recommendations to assist cities and jurisdictions create flexible parking regulations. An APA Advisory Service Report by T.P. Smith entitled "***Flexible Parking Requirements***[6]**"** presents a comprehensive approach to develop local parking requirements. Through zoning land use requirements, ***Flexible Parking Requirements*** emphasizes the ability for developers to have options in providing parking based on potential variations in parking demand. ***Flexible Parking Requirements*** describes a parking assessment approach for city planners and engineers based on the following steps:

1. Determine generic development characteristics in regards to land use, employment densities, mode of travel, the cost of parking and other features related to general uses.
2. A review of parking previous experiences (studies, literature, and zoning ordinances) elsewhere.
3. Survey of parking demand and problems at existing uses at the proposed facility.
4. Establish parking policy governing the level of service to be provided.
5. Determine zoning requirements.
6. Monitor parking standards.

Although the approach outlined above is fairly effective and reliable, APA notes that "this method…is labor intensive and is more often neglected by municipalities in favor of 'borrowing' codes from other zoning ordinances." Since many cities lack the resources or political endorsement to change parking codes/requirements, they tend to rely on the experiences of neighboring cities. However, this assumes that the neighboring cities codes have been well established and are working successfully which is often not the case. As previously mentioned, caution should be exercised when borrowing and applying zoning ordinances that "work" in one city because they may not necessarily achieve the same results in another city due to variation. In order to effectively respond to different contexts, APA suggests making zoning ordinances flexible enough to allow for those special circumstances that may arise in particular projects. Flexibility in these ordinances is meant to expedite the planning process by limiting the amount of zoning variance procedures that are required by jurisdictions whose have strict and rigid

[6] T.P. Smith, *Flexible Parking Requirements*, Planning Advisory Service Report No. 377 (Chicago; American Planning Association, 1983).

ordinances. Some of the circumstances in which flexibility in requirements may be appropriate are shared parking, captive markets, in-lieu fees, off-site parking, ridesharing programs or transit options.

The concept of parking flexibility can be traced back to the 1970's as a response to instituting parking management tactics. As cities look to integrate flexibility into their zoning ordinances that will allow for later adjustments to parking requirements they look to a variety of methods to achieve this, some of the most common ways include, shared parking, in-lieu fees, credits for ridesharing, and credits for public transportation. Despite cities desires to create flexible zoning ordinances one of the key impediments toward realizing this goal is the administrative procedures prescribed by individual jurisdictions.

The Parking Consultants Council (PCC) provides some insight into how flexibility can be sewn into parking requirements. One of the key recommendations the PCC makes is providing credit to developers that they will able to routinely apply to handle certain adjustments to parking requirements. Furthermore, the use adjustment requires the developer to pledge to provide additional parking up to the unadjusted standard if the city later finds that the projected demand has been exceeded.

Weant and Levinson and the Eno Foundation's *Parking*

In the publication entitled ***Parking***, Weant and Levinson in collaboration with the ENO Foundation take a comprehensive view at parking by incorporating the different elements and applications of parking. ***Parking*** reviews a range of parking topics from assessing different types of parking demands to citing examples of parking experiences throughout the nation. Presented below are several topics mentioned in ***Parking*** which would be beneficial and applicable for Bay Area cities.

Parking Demand - This resource provides an approach to associating parking requirements to appropriately assessed parking demands. In general, ***Parking*** cites that peak parking demands should represent the "85 percentile" of demand values or that, on average, the demand should be exceeded by only 15 percent of the time. Therefore, the minimum zoning requirements should be set at around five to ten percent more than the peak demands. However, these parking requirements should be adjusted for the accessibility effects of transit and walk-in traffic. In addition, lowered parking requirements should be established for retail, restaurants, and entertainment land uses that are within close proximity (1,000 foot walking distance) to office workers and multi-use developments should allow for shared parking among individual uses.

Parking Requirements - ***Parking*** also describes the types of allowances that should be made for shared parking including parking requirements for multi-use developments. These requirements should be based on the observed peak period for maximum parking demand and information about the estimated daytime and evening demands for specific uses. Given this information shared parking requirements can be appropriately applied to effectively use the multiple types of land uses in the multi-use developments. ***Parking*** also outlines a general approach to reducing parking requirements for the City Center/Central Business District (CBD). In this approach ***Parking*** suggests that parking requirements reflect multi-destination trips as well as the

availability and proximity to public transportation. In these instances, parking requirements for retail users should be reduced up to 50 percent from those requirements established for similar uses in suburban settings and additional reductions should be made to account for transit riders.

Min/Max Districts - In the Bay Area, those cities that are particularly well served by transit, "minimax" districts can be established. For these districts, a minimum number of parking spaces are required according to the development intensity and transit availability, but developers also must limited the amount of parking provides so as to not exceed the maximum requirement for the area. For example, in an area zoned at a high density with high transit accessibility, a development would be limited a maximum number of allowable spaces. In an area of zoned at a medium density, developers could be required to provide both a minimum and a maximum number of allowable spaces while developers building in a lower density area would have only a minimum number of allowable spaces required. These minimax districts can be tailored to the specific sites within cities such as redevelopment sites or new development areas.

Flexibility - Similar to the APA's approach to local zoning local regulations, flexibility in parking requirements is discussed in ***Parking.*** The authors suggest two areas where flexibility can be applied to parking requirements, they are: via in-lieu fees and transit and ridesharing. In-lieu fees refer to a payment made by a developer instead of building the required amount of parking. Developers are also able to enjoy reduced parking requirements for their project if they choose to support transit or ridesharing programs. These two topics will be discussed in detail in Chapter 3.

Weant and Levinson make many good points of the various ways parking can be approached and in doing so they provide some guidelines to consider when developing parking requirements. Through careful analysis of the variables affecting parking demand such as development density, transit availability, car ownership, and household income, parking requirements can be tailored to better serve and compliment the land uses which they are intended to support. Land uses are not static as economic forces play a key role in influencing their development and affect changes in their type and intensity. As such, parking requirements should be developed to allow for flexibility in their application and accommodate the dynamic nature of existing and future land uses.

Urban Land Institute's *Shared Parking*

The Urban Land Institute (ULI) report ***Shared Parking,*** presents the findings of shared parking research over the past 22 years. In its first publication in 1983, ***Shared Parking*** established a methodology for shared parking analysis. In its revised second publication (2005), the aim was to review and assess whether the established methodology was still appropriate in the present context, in light of lifestyle changes have led to an overall increase of the use of automobiles. A meeting of parking experts concluded that the methodology first established was still appropriate, however, the default values needed to be updated. This was of particular importance as the ITE found that almost half of all local governments surveyed had incorporated some shared parking into local codes either directly or as an option and cited the ULI shared parking methodology.

The concept of shared parking is defined as a parking space that can serve two or more individual land uses without conflict or encroachment.[7] Opportunities where parking can serve more than one use are through time, distance, or multiple users. Individual land uses typically have different peak times of activity, even under similar land use categories. For example a coffee cafe is most busy during the early morning commute, while a typical restaurant operates at its peak during the evening. As such, the same parking spaces can be shared for the coffee cafe and restaurant since their peaks occur during separate time periods. Another shared parking opportunity is when corresponding uses are within a walkable or accessible distance of each other. For example, a shopping center has independent retail establishments; however, customers typically park once and then visit several stores. Essentially, shared parking is the concept that parking spaces for individual land uses cannot be reserved and dedicated for specific users. An off-street space in a parking facility could serve multiple users just as on-street spaces are not exclusively dedicated for particular land uses. As such, municipal parking facilities could provide shared parking opportunities for multiple users.

Mixed-Use Development - Another fundamental component to the concept of shared parking is mixed-use development. Mixed-use developments are classified as those developments which have two or more land uses and display significant functional and physical integration of their project components. In many ways shared parking compliments mixed-use development by drawing upon the synergy that occurs among different uses to efficiently utilize a limited parking resource. For example, mixed-use projects that combine residential and commercial uses provide housing for the neighborhood and by extension a customer based for retail goods and services that help to support local businesses and a broader range of retail activities. As land values increase, it becomes more efficient to provide shared parking as it frees up the amount of available developable land which can then be used to meet other neighborhood needs.

Transit Accessibility - A key component to making TOD's successful is ensuring transit accessibility. Creating convenient connections to transit involves taking into account the following route characteristics; length, continuity, and directness. Pedestrians seek to reach their transit station in the shortest and most direct route possible. As such, pedestrian connections should ensure that sidewalks and pathways are created in a way that they are easy to find and follow.

Goals of Shared Parking - The aim of shared parking however is not only to effectively manage its existing parking pool, but to ensure enough parking to meet peak-hour needs at any given time. There exists a common misperception which asserts that shared parking reduces the overall amount of parking provided for individual uses and therefore threatens the economic viability of those uses. Naturally then, there is an aversion by property and business owners to engage in a practice that threatens to hurt their business. However, the converse holds true, shared parking has many benefits as an economic development tool that encourages mixed-uses.

Shared parking allows increased flexibility in land development by reducing the amount of space required for parking and allowing that space to be used for other purposes. As land is shifted

[7] Urban Land Institute *Shared Parking,* Second Edition (2005).

from parking spaces to activities that employ more workers, yield higher tax revenues and increase profitability[8]. Developers can also use the space to enhance the quality of the building through façade articulation, higher quality building materials, or the provision of open space. Enhancements of these types help create a more appealing physical environment and by extension improve the economic value of the property. It should be noted that shared parking facilities are typically financed with in-lieu fees, fees paid by developers instead of providing required parking spaces, and as actually increase the parking supply. In-lieu fees in themselves also provide benefits to the developer by allowing him to effectively meet city development requirements which would otherwise impede the project's approval.

The goal then of shared parking is to find the balance between providing adequate parking to support new development or redevelopment while minimizing the negative aspects of excessive land area or resources devoted to parking. As a result, the *Shared Parking* (Second Edition) provides updated parking ratio information including:

- Separate parking ratios for visitors, customer, employees, residents, and other users;
- Definitions of "weekday" and "weekends";
- Additional mode choices;
- New captive market adjustments; and
- New and refined land use scenarios.

Shared Parking Methodology - As stated above, the methodology of *Shared Parking* is still appropriate in the present context. For cities to approach potential shared parking opportunities, the following nine step system described in *Shared Parking* is briefly summarized below:

Step 1: Gather and Review Project Data
A thorough investigation of complete and accurate information regarding the types and quantities of each land uses should be conducted to avoid discrepancies in the amount of required parking. The availability of public transportation in the area, transportation demand programs, and the physical relationships among land uses will also need to be assessed as they can have significant impacts on the success of shared parking provisions.

Step 2: Selecting Parking Demand Ratios
Referring to the 85th percentile is the recommended parking demand ratios to use by the *Shared Parking* report as it is generally accepted to represent the average (or less than) demand of 85 percent of the case studies. However, in some instances an adjustment of parking demand for the more closely related land uses may be required. Additionally separate parking demand ratios should be used for weekdays and weekends.

Step 3: Select Factors and Analyze Differences in Activity Patterns
The adjustments of parking needs for combination of uses is best made when parking demand ratios are broken down into component parts (visitor, customer, employee and resident demands). Modal splits should also be considered with respect to access to public transportation as this affects the overall demand for parking.

[8] Mary McShane and Michael Mayer (1982, 136)

Two of the key factors that have a significant impact on the accumulation of vehicles are; time of day and seasonal adjustments. Therefore these two variables should be observed and evaluated. Seasonal adjustments apply especially for retail uses during the holiday season as they experience heightened demand during this time while demand for other uses may be low during the same time. Time of day patterns should also be assessed as identify the appropriateness of parking during peak and non-peak hours.

Step 4: Develop Scenarios for Critical Parking Need Periods
Several scenarios should be developed to ensure that the peak hour is identified for the proposed land uses. Cities should first consider the demand each land use would generate in a stand-alone mode. As such, the quantity of land use should be calculated by the parking ratio before any factors have been applied. This would ensure any additional factors could be adjusted under different scenarios. The more scenarios which are developed, the more comprehensively cities can understand parking conditions.

Step 5: Adjust Ratios for Modal Split and Persons per Car
Adjustments for reduced use of automobiles due to the use of alternative modes of transportation or carpooling can be made by a mode adjustment. This mode adjustment refers to the modal split of automobiles and persons per car. Mode adjustments are only intended for significant changes in modal split, when auto occupancy for that use would be unusually affected. One such example is the types of employees associated with a land use, where as hotel and retail employees may be more likely to use transit versus an office employee in the same location.

Step 6: Apply Noncaptive Adjustments
For a given land use there is a "captive market", people who are already present in the immediate vicinity and are likely patrons of a second use. Those individuals who are "captive" typically reduce the parking needs for that land use. However, adjustments need to be made for those individuals who are "noncaptive".

Step 7: Calculate Required Parking spaces for Each Scenario
Given the total parking needs for each land use cities can estimate of the overall shared parking need through each developed each scenario.

Step 8: Determine Whether Scenarios Reflect All Critical Parking Needs
Careful analysis should be conducted to determine the reliability of the projections made to ensure that critical parking needs are being addressed.

Step 9: Recommend a Parking Plan
Development of a comprehensive parking plan that implements the shared parking principles discussed in this outline.

No publication on the subject of parking has stimulated as much discussion and interest as ***The High Cost of Free Parking*** by Donald Shoup. Shoup, a professor of planning at the University of California, Los Angeles, has spent most of his career researching parking and land use relationships. The book draws upon his many years of research to present several fundamental conclusions:

1. The concept that cities must set parking requirements to assure that private developers will provide adequate parking has resulted in the provision of excessive parking. The over supply of parking is wasteful of land and results in reduced development potential.
2. The practices used by most cities to set their parking requirements are inherently flawed. Many cities set their requirements by consulting with their neighbor cities or perceived peer cities. Other cities draw their requirements from sources such as the ITE Parking Generation publication without clearly linking the information to the actual setting in which the requirements would apply. As a result no adjustments are made for shared parking, for transit use, and for other features that affect parking demand.
3. While many view the idea of ample free parking as a sign of good planning and a stimulant to business, in reality free parking has significant costs associated with it. The land and construction costs of parking are passed on from developer, to property owner, to tenant to finally us, the consumers. There is a major hidden subsidy associated with the notion of free parking.
4. Efforts to keep parking free or very low cost often results in situations where the parking supply is saturated. This is common in downtown areas and business districts where parking is free or where parking meters rates have been purposely held low. The result is that customers come to the area and cannot find parking. Cruising for parking is a key result and Shoup estimates that as much as 30 percent the traffic in these areas may be due to the inefficient searching for a parking space.
5. To free up the parking supply and reduce cruising, Shoup recommends pricing the parking. Prices should be adjusted to a point where the price is high enough to reduce the average occupancy of the spaces to the 85% level. At this level, costumers should find it easy to find parking.
6. When parking fees are charged in a district as a means of managing demand, Shoup also recommends that the net revenue be returned to the district to fund improvements to parking and transportation. Business owners and merchants should be involved in determining how the funds will be spent. This approach should help overcome the inherent resistance to increased parking fees that most merchants commonly express.

The High Cost of Free Parking is a good introduction to many of the basic principles and concepts surrounding the development and implementation of parking policy. It is well written and comprehensive. The conclusions or recommendations could be used by cities to modify their parking programs and policies in ways which would support smart growth and TOD. It does advocate these approaches, and does not fully explore other types of programs or policies which might lead to similar results.

Victoria Transport Policy Institute's *Parking Solutions A Comprehensive Menu of Solutions to Parking Problems*

The Victoria Transport Policy Institute under the leadership of Todd Littman, it's founder and director has developed a website entitled *Parking Solutions A Comprehensive Menu of Solutions to Parking Problems* < http://www.vtpi.org/tdm/tdm72.ht >. The website is unique in that it provides an accessible on-line source of information regarding solutions to common parking problems. The underlying philosophy of the information presented in the website is expressed as follows on the opening page:

> *Parking Management Paradigm Shift*
>
> Parking Management represents a paradigm shift, that is a change in the way parking problems are defined and potential solutions evaluated.
>
> *Old paradigm*: motorists should nearly always be able to easily find, convenient, free parking at every destination. Parking planning consists primarily of generous minimum parking requirements, with costs borne indirectly, through taxes and building rents.
>
> *New paradigm*: parking facilities should be used efficiently, so parking lots at a particular destination may often fill (typically more than once a week), provided that alternative options are available nearby, and travelers have information on these options. This means, for example, that parking lots have a sign describing available, that motorists may often have a choice between paid parking nearby, or free parking a few blocks away. It also requires good walking conditions between parking facilities and the destinations they may serve. Parking planning can therefore include Shared Parking, Parking Pricing and regulations, parking User Information, and Walkability improvements.

The remainder of the website focuses on how each of the above solutions can be used to address specific parking problems. This website is a good resource that is well organized and has information that supports parking management policies which would encourage smart growth and TOD.

Parking 101 and 102 by the International Parking Institute TRB and TCRP sources and other national research studies

Research highlighting TOD policies and practices is ongoing and continuously pursued by many organizations including; the International Parking Institute, the Transportation Research Board, the Transit Cooperative Research Program, and other national research organizations. These and other organizations help present the latest information regarding implementation strategies, case studies, and policy reflections through technical reports, journal publications, and conferences. Their collaborative efforts help educate the public, professionals, and policy makers in uncovering the relevancy of TOD today and working towards perfecting its practice.

As leading entities on parking research, policy, and practice it is highly advised and recommended that reference be made to studies published by these organizations as cities engage in the process of expanding their knowledge about the latest types of policies and practices that may prove to be the most beneficial for their particular context.

SECTION II: COMMONLY USED BAY AREA PARKING POLICIES

This section documents and reviews the parking requirements and policies used by cities and communities throughout Bay Area. This review is presented in three main topics: 1) how cities typically develop their parking generation rates, parking codes and standards, and other city zoning ordinances related to parking; 2) differences between policies and standards provided for higher density areas such as a downtown or TOD site versus more general citywide standards; and 3) examples of parking requirements in Bay Area cities. The examples presented include larger cities such as San Francisco and Berkeley, smaller cities such as Hercules, Menlo Park and Redwood City, cities with lower density development such as Walnut Creek and Mountain View as well as cities with higher density housing such as Dublin, El Cerrito and San Mateo. These examples present an array of Bay Area communities and as well as their associated parking requirements.

In early 2002, MTC conducted a review of parking data and policy information in an effort to document existing code requirements and management programs implemented by individual cities in the Bay Area. This review was based on available records provided by participating cities in the *Parking Study Inventory,* as in 2002. In order to identify existing parking policies, city zoning ordinances were examined to capture a general typology of Bay Area parking policies for downtowns and central business districts based on parking code requirements and parking generation rates. Further review of parking policies were conducted to establish which cities have established TOD goals. An identification of TOD policies was established and a comparison of these policies was performed.

Developing Parking Standards

Parking standards and guidelines are typically summarized in the zoning ordinances of Bay Area cities. The majority of the parking space requirements are based on total square footages or other factors for specific uses such as number of employees, theater seats, or even bowling lanes or gas pumps. These standards are based on specific codes that establish the number of required spaces by land use type and size. The importance of these regulations is such that they have a direct impact on the supply of parking in the downtowns of Bay Area cities.

Some cities establish these standards with reference to the Institute of Transportation Engineers Parking Generation or one or more of the other resource documents noted earlier in this paper.
Most cities, however, tend to use the parking standards of neighboring cities or their perceived peer cities. In many cases there is no true factual or scientific basis to the standards which the cities commonly. The importance of these regulations is such that they have a direct impact on the supply of parking in the downtowns of Bay Area cities. As such, we will examine the

differences between parking standards, their application within different parts of the city as well as how they are applied across cities.

Parking Standards: Citywide versus Downtown, City Centers, and Infill Areas

The typical approach cities have taken in developing and applying parking standards has been such that requirements are consistent, allowing for few exceptions and fewer variations. This approach has often translated into a single set of requirements that are applied to the entire city. In theory, the blanketed "one size fits all" designation is intended to ensure compliance with these requirements despite these changes in land use. As such, parking standards are generally developed to accommodate the "worst case scenario," the peak hour of the peak day of the year and are then applied as the minimum parking requirements.

As citywide land uses tend to be separated by function (i.e. offices, shops, restaurants, and residences serve different purposes and therefore users), each requires an individual supply of parking. Although this type of requirement may be applicable when land uses are developed separately (by distance or function), these requirements tend to constrain developments with a shared or mixture of uses. Therefore under mixed or higher density land uses, these requirements can lead developers into providing excessive parking supplies.

In particular, a downtown, city center or other infill areas are reflections of various uses and functions coming together. As a dynamic entity which is constantly changing as people, businesses, and visitors move in and out, it presents a unique set of qualities that need to be considered in developing parking requirements. When parking requirements are made to be inflexible, they fail to take into account the interplaying variables that can affect parking demand.

Not only are cities as a whole different, but areas within cities are distinctive with neighborhoods, transportation issues and pace of development. Downtowns in particular differentiate themselves from the remainder of the city by their unique and distinctive qualities as reflected by the types of density, land use, transit accessibility, and other such factors presented there. Correspondingly, cities have developed specific parking standards for their downtowns that compliment and enhance the existing character of the area. Downtowns are generally denser and more compact as a result of a higher intensity development when compared to the development citywide which tends to be characterized by lower density and sprawl. With respect to land uses, downtowns tend to aggregate uses in mix them along the same area and often within the same building, whereas outside the downtown these uses tend to be segregated by type. Downtowns also tend to provide better transit connectivity offering various alternatives to auto use. The downtown environment illustrates the interplay between these different forces in the following way, in establishing higher density development downtowns create the opportunity for increased types of development, notably housing development which in turn provides the ridership (population) numbers necessary to sustain transit.

Downtowns, city centers, and infill areas are generally identified as unique districts characterized by distinctive attributes and shaped by a particular set of factors. Bay Area cities recognize this and have begun to tailor their parking requirements to reflect the nuances found in these areas.

As such, the downtown environment presents many opportunities where parking can be re-evaluated in light of these characteristics to create better and more livable places to live, shop, and work.

Bay Area Parking Standards

As discussed previously, cities tend to take cues from and compare themselves to their neighbors; there is no exception when it comes to Bay Area cities as they develop their parking requirements. In order to identify commonalities among cities and their application of parking requirements, 15 cities were selected for review. Each city/jurisdiction was categorized based on the following attributes; geographic location[9], area type[10], estimated total population size[11], and availability of transit options[12]. Based on these classifications we can identify trends occurring between cities based on their distinctive characteristics. Table 2 presents the cities and their defining characteristics.

[9] Geographic location is used to denote the county to which each city corresponds.
[10] Source: *Census 2000, MTC 2006*. Area type designations were based on MTC's estimated population densities (total city population divided by land area). Area types were categorized as the following: less than 1,000 persons /sq mile = rural, 1,000 to 5,999 persons /sq mile = low suburban, 6,000 to 9,999 persons /sq mile = high suburban and 10,000+ persons /sq mile = urban.
[11] Source: *Census 2000, MTC 2006*. Estimated population size was categorized as the following: less than 50,000 persons = small city, 50,000 to 69,999 persons = medium small city, 70,000 to 99,999 persons = medium large city and 100,000+ persons = large city.
[12] The number of transit providers are based on the number and type of transit modes serving the city. Refer to appendix X for further detail.

Table 2
Bay Area Designation

City	Area Type[(1)]	County	Population[(2)]	Transit Providers
Dublin	Low-Suburban	Alameda	30,000	Amtrak, BART, DART, Tri-Valley Bus
Hayward	Low-Suburban	Alameda	140,000	AC Transit, Amtrak, BART,
Hercules	Low-Suburban	Contra Costa	19,500	WestCAT
Menlo Park	Low-Suburban	San Mateo	30,800	Caltrain, City Shuttle, SamTrans, VTA
Morgan Hill	Low-Suburban	Santa Clara	33,600	Caltrain and VTA
Mountain View	Low-Suburban	Santa Clara	70,700	Caltrain and VTA
Redwood City	Low-Suburban	San Mateo	75,400	Caltrain, SamTrans
San Rafael	Low-Suburban	Marin	56,100	Golden Gate Transit, MCTD
Union City	Low-Suburban	Alameda	66,900	BART, AC Transit, Dumbarton, Union City Transit
Vallejo	Low-Suburban	Solano	116,800	Bay Link Ferry, Benicia Transit, Vallejo Transit, Vine Transit
Walnut Creek	Low-Suburban	Contra Costa	64,300	BART, City Shuttle, County Connection
Berkeley	High-Suburban	Alameda	102,700	AC Transit, BART, and shuttle systems
El Cerrito	High-Suburban	Alameda	23,200	AC Transit, BART, RIDES
San Mateo	High-Suburban	San Mateo	92,500	Caltrain, City Shuttle SamTrans,
San Francisco	Urban	San Francisco	776,700	BART, Muni, Golden Gate Transit, Ferry Service, SamTrans

Source: Census 2000, MTC, July 2006, Wilbur Smith Associates, August 2006

Notes:

(1) Area type designations were based on MTC's estimated population densities (total city population divided by land area). Area types were categorized as the following: less than 1,000 persons /sq mile = rural, 1,000 to 5,999 persons /sq mile = low suburban, 6,000 to 9,999 persons /sq mile = high suburban and 10,000+ persons /sq mile = urban.

(2) Estimated population size was categorized as the following: less than 50,000 persons = small city, 50,000 to 69,999 persons = medium small city, 70,000 to 99,999 persons = medium large city and 100,000+ persons = large city.

Based on the aforementioned characteristics, cities were grouped and classified into the following area type categories, low-suburban, high-suburban, or urban. The parking standards for each of these cities were then reviewed and compared by area type and by land use (e.g. residential, retail, and office).

Residential Parking Requirements

A review the minimum parking requirements for multi-family residential uses indicates that most Bay Area cities assume each household has at least one vehicle available for use and as such

establish the minimum parking requirements accordingly. For low-suburban cities, the average parking requirement for a studio is 1.4 spaces, 1.5 spaces for a 1-bedroom unit, 1.9 and 2.0 spaces for a 2-bedroom and 3+bedroom unit, respectively. High-suburban cities have lower minimum requirements, averaging 1.1 spaces for a studio, 1.2 spaces for a 1-bedroom unit, 1.4 and 1.5 spaces for 2-bedroom and 3+bedroom units. Note that as of May, 2006, the City of San Francisco (classified as urban) does not have a parking minimum, but rather a parking maximum within its Downtown Residential District and *C-3* Downtown Commercial Districts[13]. Table 3 presents the downtown/infill/parking district parking requirements for residential uses in 15 Bay Area cities.

Table 3
Residential Multiple-Family Dwelling Minimum Parking Requirements

Area Type	Number of spaces per dwelling unit			
	Studio	**1-Bedroom**	**2-Bedrooms**	**3+ Bedrooms**
Low-Suburban	Average: 1.4	Average: 1.5	Average: 1.9	Average: 2.0
Dublin	1.0	1.0	2.0	2.0
Hayward	1.5	1.7	2.1	2.25
Hercules(1)	1.25	1.25	1.25	1.25
Menlo Park	1.0	1.5	2.0	2.0
Morgan Hill	1.5	1.5	2.0	2.5
Mountain View	1.8	1.8	2.3	2.3
Redwood City	2.0	2.0	2.0	2.0
San Rafael(2)	1.0	1.5	1.5	2.0
Union City	1.5	1.5	2.0	2.0
Vallejo(3)	1.25	1.25	1.25	1.25
Walnut Creek	1.25	1.5	2.0	2.1
High-Suburban	Average: 1.1	Average: 1.2	Average: 1.4	Average: 1.5
Berkeley	1.0	1.0	1.0	1.0
El Cerrito	1.0	1.0	1.5	1.5
San Mateo	1.2	1.5	1.7	2.0
Urban				
San Francisco	N/A (4)	N/A (4)	N/A (4)	N/A (4)

Source: MTC *Parking Study Inventory*, 2002; Wilbur Smith Associates July 2006

Notes:

(1) Hercules' requirements based on the Central Hercules Plan Regulating Code.

(2) San Rafael's requirements based on the Downtown Parking Assessment District.

(3) Vallejo's requirements based on the Downtown Vallejo Specific Plan for the Central Downtown.

(4) Note as of May 24, 2006, San Francisco's Downtown Residential District (DTR) and *C-3* Districts have no minimum off-street accessory parking requirement for residential uses.

[13] See Ordinance N. 129-06 amending the San Francisco Planning Code Sections 102.9, 151, 151.1, 154, 155, 155.5, 161, 166, 167 and 309 which imposes new requirements in *C-3* Zoning Districts regarding permitted off-street parking and loading.

The variation of minimum parking requirements among the cities can be explained based on their defining characteristics. The residential parking standards for downtowns across the Bay Area are similar among cities within the same area type. Comparing city type to city type, minimum parking requirements for multi-family housing reflect land use conditions and the availability of transit service within each of the three city type categories. In suburban cities like Union City, Morgan Hill, and Hayward, where densities are lower with more public transit options, minimum parking requirements are high at 1.5 to 2.25 per unit. For cities in more urban settings like Berkeley where densities are higher and transit service is highly accessible, minimum parking requirements are significantly lower, at 1.0 space for all residential uses, or in the case of San Francisco, there are no minimums and maximums are proposed.

As such, residential parking requirements indicate that cities with higher transit accessibility and higher densities tend to have lower parking requirements which are supported by the mixed-use nature, pedestrian and transit oriented nature of the downtown. Studies conducted on vehicle ownership reveal that density and transit availability are considered to be significant variables in predicting vehicle ownership[14]. This fact helps to further reinforce lower parking requirements in downtowns as cities give consideration to key indicators of parking demand such as vehicle ownership rates.

Retail and Office Parking Requirements

The variation which exists among cities for retail and office parking requirements is not as easily quantified or explained as in the case of residential requirements. A comparison made between city types identifies notable differences in the parking standards for low-suburban, high-suburban, and urban cities. Table 4 presents the downtown/infill/parking district parking requirements for retail and office uses in 15 Bay Area cities.

[14] Ewing, Reid and Shi-Chiang Li. 1998. *A Vehicle Ownership Model for FSUTMS.* Washington, D.C.: National Research Council, Transportation Research Board.

Table 4
Retail and Office Minimum Parking Requirements

Area Type	Retail Parking Requirements[(1)]	Office Parking Requirements[(1)]
Low-Suburban	**Average: 4.0 spaces**	**Average: 4.2 spaces**
Dublin	3.33 spaces	2.85-6.0 spaces
Hayward	4.7-5.7 spaces	5.0 spaces
Hercules[(2)]	2.5 space	3.3 space
Menlo Park	6.0 spaces	5.0 spaces
Morgan Hill	4.0 spaces	4.0 space
Mountain View	3.33 spaces	3.3 spaces
Redwood City	5.0 spaces	5.0 spaces
San Rafael[(3)]	2.5-4.0 spaces	3.3 spaces
Union City	5.0-5.7 spaces	5.0 spaces
Vallejo[(4)]	2.5 spaces	3.3 spaces
Walnut Creek	4.0 spaces	4.0-5.0 spaces
High-Suburban	**Average: 1.9 spaces**	**Average: 2.3 spaces**
Berkeley[(5)]	1.5 spaces	1.5 spaces
El Cerrito	2.0-3.3 spaces	3.3 spaces
San Mateo	1.4 spaces	1.3-3.1 spaces
Urban		
San Francisco	N/A [(6)]	N/A [(6)]

Source: MTC *Parking Study Inventory*, 2002; WSA July 2006
Notes:
(1) Requirement is per 1,000 square feet of gross floor area.
(2) Hercules' requirements based on the Central Hercules Plan Regulating Code.
(2) San Rafael's requirements based on the Downtown Parking Assessment District.
(3) Vallejo's requirements based on the Downtown Vallejo Specific Plan for the Central Downtown.
(4) Berkeley's requirements based on the zoning code within the C-2 (Downtown) area.
(5) Refer to Appendix A for parking requirements. Note that San Francisco does not require any off-street parking for non-residential uses within its C-3 (Downtown Commercial District).

The minimum parking requirements for downtown retail uses among Bay Area cities range from 1.0 to 6.0 spaces. Low-suburban cities have the greatest range of retail parking requirements from 2.5 spaces to 6.0 spaces, followed by high-suburban cities whose requirements range from 1.5 to 3.3 spaces, and no parking requirements for retail uses in downtown urban settings. Reviewing city requirements within area categories identifies further variation.

In the low-suburban city category, the lowest retail parking requirements are observed to be 2.5 spaces. It should be noted however, that the 2.5 spaces requirement is based on the Regulating Code for the City of Hercules. However, the average parking requirement for retail uses of cities identified as low-suburban is around 4.0 spaces per 1,000 square feet of gross floor area. The variation which exists among parking requirements for retail uses may be partially explained due to the nature of the retail uses. Some cities differentiate within the retail category between

general retail uses, bulky vs. non bulky retail sales, service, and repair retail establishments and so on. For cities in high-suburban settings, the range of parking requirements varied from 1.4 to 3.3 spaces. These cities had lower parking requirements than their low-suburban counterparts which can be explained by their accessibility to transit and high population levels. The average parking requirement for retail uses among these cities was 1.9 spaces. In cities like San Francisco that are reflective of more urban settings, there were no parking requirements for retail uses in the downtown.

Parking requirements for office uses in cities within the same area type were applied similarly to those requirements for retail uses. For low-suburban cities, office parking requirements ranged from 2.2 to 6.0 spaces. The average parking requirement established for office uses in low-suburban cities was 4.2 spaces. Among low-suburban cities, the average parking requirements reflect cities which had one or two transit providers and small to medium population sizes. For high-suburban cities, the average parking requirement was noted at 2.3 spaces, these cities had a high number of transit providers (i.e. both regional and local providers). Similarly to that observed for retail uses, there were no parking requirements in urban settings. The lack of parking requirements can be attributed to the high level of transit accessibility and policies like San Francisco's "Transit First"[15] policy which heavily influences the parking supply. The policy states that no parking is "required" within the Downtown (C-3) area given the area's mixed-use nature that places jobs and services in close proximity to each other and where transit accessibility provides a true alternative to vehicle use. By combining uses that require parking at different types of day (retail versus office), reducing overall fewer parking spaces are necessary to meet complementary parking demands. As such, this and similar policies seek to capitalize on the inherent nature of land uses as well as their surrounding factors to help reduce the amount of parking and in so doing enhance the quality of this space by providing more productive land uses.

The data collected and the examination of downtown, central city, and infill area parking requirements for several cities has yielded insight regarding parking requirements across the Bay Area. Generally, parking standards were shown to be comparable to standards established for other Bay Area communities that have specific downtown parking standards and therefore tended to be similar for uses across neighboring cities. However, some distinct variation did exist among the minimum parking requirements established by some cities. The lowest parking requirements observed were a reflection of specific policies adopted to promote TOD and smart growth. The requirements based on these policies are just some examples of how cities have begun the process of examining their parking requirements to reflect the local conditions in which they will be applied, as evidenced through the development of transit policies and regulating codes. The next section describes how Bay Area cities are further experimenting with policies and programs to promote TOD and smart growth.

[15] Lower parking requirements in Downtowns with higher densities and better transit service.

SECTION III: LOCAL PARKING PROGRAMS PERTAINING TO INFILL, TOD AND DOWNTOWN DEVELOPMENT

A review of Bay Area parking policies has uncovered a variety of individual interests within jurisdictions along with overarching themes and commonalities among policy practices. In general, TOD and smart growth policies are part of current downtown zoning requirements through land use, specialized districts, participation in TDM and TSM programs and pedestrian and bicycle accessibility and mobility. The following section presents a review of the different mechanisms employed by Bay Area cities to promote and establish TOD and smart growth policies in respect to parking.

Smart Growth Goals, Policies and Objectives

The following are common guiding policies/objectives Bay Area communities have committed to as they promote smart growth principles in their individual cities:

- ***Encourage mixed-use high density development with connectivity and efficient use of parking.*** For example, the City of Dublin's *Implementing Policies (D) of the Downtown Core Specific Plan* states "encourage mid-rise office apartment buildings and parking structures with ground floor retail space. Create store-lined pedestrian connections between existing shopping centers."
- ***Coordinate parking with private development and public improvements in the downtown to promote and foster residential, office, and retail activities.*** As stated in the City of Mountain View's *Downtown Precise Plan Development Objectives*, parking related goals such as providing incentives and shared parking facilities will support increased activity in the core areas of the downtown.
- ***Create supportive parking controls and requirements that advance parking management plans and alternative transportation options.*** Under the City of Walnut Creek's, *Comprehensive (BART) Station Area Plan, (Land Use and Quality of Life)*, the City encourages high-density commercial and residential development through supportive parking requirements. These requirements also include adjustments for parking controls based on the TSM and TDM programs such as increased bus capacity and shared parking associated with TOD development in the immediate station area.

Some of the common factors in support these parking goals and policies are through zoning and overlay districts, parking districts, reduced parking requirements, in-lieu fees, TSM and TDM programs, improved transit accessibility, increased pedestrian and bicycle circulation, and overall mobility.

Zoning

In an effort to promote increased development density in areas with good transit access, numerous Bay Area cities have revised their zoning policies to allow for increased Floor to Area

Ratios (FAR's) in core downtown or infill areas. Higher FAR's translate into increased concentration of uses and overall higher-density development that promotes non-auto opportunities such as transit hubs. Revisions to FAR's maximums have allowed for the creation of "overlay districts" throughout many cities in the Bay Area.

An overlay district is a defined special purpose area which has different requirements, programs, or plans within a City's downtown or other designated area. For example, the Transit Overlay Zone in the City of Mountain View has allowed the creation of corporate neighborhood that is integrated with a new light rail station. Within the Transit Zone, the City has been able to require developers to incorporate design features more common to pedestrian-oriented urban areas and to retrofit the off-street circulation system for pedestrians and bicyclists.

For TOD and Transit Overlay Zones, some of the requirements placed on new development can include:

- The site plan must provide for carpool parking and rideshare drop-off and pick-up areas. Bicycle parking and showers are also required.
- The frontage/front doors of the building must be oriented toward public sidewalks leading to the light rail station.
- If needed, public walkways must be provided through the site to shorten the distance to the transit station and to connect to adjacent properties.
- The developer must fund a commute alternatives program for free or subsidized transit passes for employees.

The Transit Overlay Zone has allowed intensification of development, while responding to the community's objective to maintain the City's unique character. The goals of this zoning technique has been to promote higher intensity development near transit to allow lower parking supplies, improve air quality, reduce traffic congestion, and create a more livable community.

Parking Districts and Zones

In conjunction with zoning changes, cities have also established parking districts and zones that seek to manage parking in distinctive ways. Examples of such districts and zones include:

- ***Central Parking District/Downtown Parking District***- These districts are typically defined within the core area of the downtown where parking is significantly constrained. The parking requirements for land uses in the Central Parking District/Downtown Parking District (CPD/DTP) are generally reduced and developers are allowed to make payments in-lieu of providing the required parking spaces. This reduction in parking spaces is aimed at promoting alternatives modes of travel to reach the downtown.
- ***Pedestrian Retail Zone –*** Located within the CPD/DPD of the City of Walnut Creek, the Pedestrian Retail Zone sets requirements for the types and locations of allowable uses within the zone. Most commonly, the ground floor uses of all establishments are required

to be retail (defined as having face-to face transactions between buyer and seller on the business premises). Upper floors are allowed to be retail, office, or residential. Parking requirements for ground floor retail are reduced if not eliminated all together, while upper floors are granted parking reductions.

- ***Limited Parking Zone***- Located with the CPD/DPD, new vehicular access to loading facilities, parking lots, or structures and buildings is prohibited along street frontages within this zone. Existing curb cuts along street frontages in the LPZ may also be eliminated.

Reduced Parking Requirements

Parking requirements are inherently tied to zoning. As such, many cities have also revised their parking requirements accordingly. Amendments to such requirements have taken on a variety of forms, some of the most important are exemplified in the measures the City of El Cerrito has taken to reduce its parking requirements, including:

- Parking reductions for projects that consolidate various small parcels into one large site.
- Parking reductions via shared parking are allowed for developments whose uses are independent of one another. Notably, that up to 25 percent of the parking facilities for night-time or Sunday uses may be supplied by an off-street facility provided by day-time and or weekday use facilities.
- A reduction of up to 15 percent of total required parking allowed for development that is within 500 feet of public transit or public rail transportation is within 1,000 feet of the site.
- No parking required for all existing buildings and new development (replacement of existing floor area) located on the ground floor and fronting the street.

In-lieu fees

Bay Area cities also provide developers with alternatives to meet parking requirements one of the most common ways is through in-lieu fees. In-lieu fees allow developers to pay a standard one-time fee for each parking space they cannot or do not wish to provide.

Cities like Mountain View charge increased in-lieu fees for spaces that are required of developments fronting the main street of the downtown (such as Castro Street), where it is most difficult to provide on-site parking. The goal of in lieu-fees is to promote shared parking facilities that encourage parking efficiency, reduce the cost of parking, and make the most effective use of parking facilities. For housing projects that are located in the City's Parking District, 100 percent of the required guest parking can be satisfied through payment of an in-lieu parking fee rather than providing the parking on-site. These in-lieu fees are often times coupled with density adjustments for residential uses. The City of Mountain view has a de facto density sliding scale for 1-bedroom residential uses that is based on the required parking being provided on-site and adherence to the parking requirement (2.0 spaces plus 0.3 spaces for guest per unit).

When in-lieu fees are paid, calculations for increases in density are based on the magnitude of change in on-site parking.

Transportation System Management/ Transportation Demand Management

TSM and TDM strategies address traffic congestion by reducing travel demand and focusing on travel alternatives such as increased transit usage, walking, and bicycling to help achieve this goal. In essence, these strategies provide guidelines for jurisdictions to follow as they seek to effectively relieve congestion in core areas of the city. By providing a toolbox of potential options, cities can best assess which strategies would be the most effective given their particular context. Bay Area cities are making the connection between TSM/TDM strategies and applicable parking policies that help reflect and reinforce the goals that these strategies propose.

The City of San Mateo is one example how TSM/TDM programs have the potential to impact and develop context appropriate parking policies. The City currently has a San Mateo Rail Corridor Transit-Oriented Development Plan (Corridor Plan) which it intends to use as a tool in shaping the growth around two specific areas; the Hillside Station Area and the Hayward Park Station Area. Both of these proposed areas would be located in the city's proposed TOD zones. As such, the Corridor Plan will guide amendments to the General Plan and Zoning Code in order to realize its goals, objectives, and policies. Amendments to the General Plan include policy 7.1 which includes the recognizes the need and importance of establishing TOD at the previously specified areas and policy 7.2 which defines the Hillside Station Area and Hayward Park Station Area to be within the TOD zones. Consequently, the City also calls for amendments to the Zoning Regulations through policy 7.3 which establishes TOD zones adjacent to the Hillsdale and Hayward Park Station areas.

In conjunction with the City's proposed TOD zones, the implementation of a Transportation Demand Management (TDM) system is also planned for. Many TDM measures being considered include the following:

- Non-residential market-rate parking permit systems and parking cash-out programs
- Market-rate residential parking charges
- Transit pass subsidies for employees or residents
- On-site car-share programs
- Residential permit parking
- Preferential HOV parking and carpool promotion and coordination
- Bicycle parking, commuter facilities including locker rooms and showers, and promotional programs
- Compressed work week, flex time, or telecommuting

The overall goal of the TDM programs would be to effectively reduce overall new trips by 25 percent or more along the established corridor (Policy 7.17). In addition, all development projects within the zone are required to submit a trip reduction and parking management plan as part of the development application (Policy 7.19). Conditions for approval shall be based on an established long and short term trip generation threshold within the corridor. Those projects that

are found to exceed their trip generation threshold shall be required to modify their trip reduction and parking management plan and incorporate Transportation Demand Management measures that are expected to increase trip reduction (Policy 7.24)

Pedestrian and Bicycling Encouragements

Cities have made conscious efforts to accommodate pedestrians and cyclists with respect to their TOD sites. Many cities have called attention to this by emphasizing connectivity as a key area in which they would like to focus their efforts as noted in various downtown area plans. Particular attention is expressed in creating linkages between parking to retail areas through the provision of such things as pedestrian passageways, bicycle parking, and better signage and lighting. Many of the improvements cities propose to encourage pedestrian and bicycle use have to do with design guidelines employed in the downtowns. A few examples of city policies/guidelines that promote increased connectivity are the following:

- **Parking Plaza -- Parking**- Parking Plazas should support activity which is secondary to the activity on the street side. Wherever possible, alisgn and connect new and existing passageways to provide clear, direct pedestrian passage through the parking plazas (*Menlo Park Center City Design Guidelines*).

- **Retention and Improvement of Existing Parking Lots –** Existing lots should be improved by with better internal circulation and connections between lots, increased landscaping, lighting, and public signage. Similar connections will be sought were possible, particularly where linking opportunities for surface lots exist, for example, behind Monterey Road (*Land Use Strategies -- Morgan Hill Downtown Plan*).

Based on the TOD policies discussed above, Table 5 presents the range of policies currently in place across the fifteen Bay Area cities previously mentioned.

Table 5
Cities with Transit Oriented Development Parking Policies

	Reduced Parking Req.	In-lieu Fees	Parking Districts	Increased FAR	TSM/TDM Programs	Specific Plan
Dublin	ü	ü		ü		ü
Hayward	ü	ü	ü			
Hercules	ü			ü		ü
Menlo Park						ü
Morgan Hill						ü
Mountain View	ü	ü	ü	ü	ü	ü
Redwood City	ü					ü
San Rafael	ü	ü	ü	ü		ü
Union City	ü	ü				
Vallejo						ü
Walnut Creek	ü	ü	ü			ü
Berkeley	ü	ü		ü		
El Cerrito	ü	ü	ü			
San Mateo	ü	ü	ü	ü	ü	ü
San Francisco	ü	ü		ü	ü	

Source: MTC *Parking Study Inventory*, 2002, City Zoning and Municipal Codes, Specific Area/Downtown Plans

Table 7 below presents the different policies by the manner in which they are employed, zoning ordinance, policy, or practice.

Table 7
Implementation of Policy by Type

TOD/Smart Growth Policy or Program	Zoning Code	Policy	Practice
Reduced Parking Requirements	Walnut Creek, Union City, Dublin, El Cerrito, Hercules, Mountain View, San Rafael, Berkeley, San Francisco, San Mateo	Redwood City	
In-lieu Fees	Morgan Hill, San Rafael, Hayward, Berkeley, San Francisco, Mountain View, Union City, El Cerrito, San Mateo	Mountain View	
FAR's	Morgan Hill, Hercules, Berkeley, San Mateo, San Francisco	Mountain View, El Cerrito, Dublin	Mountain View
TSM/TDM	Hayward, San Mateo, San Francisco	Mountain View, San Mateo, San Francisco	San Francisco
Parking Districts	Walnut Creek, Mountain View, San Rafael, Hayward, El Cerrito, San Mateo		

Source: MTC *Parking Study Inventory*, 2002, City Zoning and Municipal Codes, Specific Area/Downtown Plans

Each of the cities surveyed shares the desire to effectively manage parking and maximize the efficiency of their existing parking supply in their congested downtowns, city centers, and infill areas. To this end, the majority of the fifteen cities currently have begun revisit their parking standards and implemented reduced parking requirements on new development. Additionally, cities have also worked to further their TOD in fill goals by offering "in-lieu" fees to developers with respect to increased density bonuses, and establishing specialized parking districts/zoning districts that further look to utilize parking in more efficient ways. The application of these policies takes various forms and is highly dependent on the context of the individual city. In the following section, we will discuss some of intricacies involved when attempting to implement such TOD policies

SECTION IV: UNDERSTANDING AND ADDRESSING PARKING ISSUES AND CONCERNS

Current land use patterns reflect of the dominance of automobile and the application of zoning codes which have separated land uses so far away from each other that they reinforce the automobile as the principle mode of transportation. As communities begin to feel the impacts of an auto-based landscape through increased congestion and time lost spent in traffic, they begin to look for alternatives.

Innovative parking policies offer alternatives and present unique opportunities for cities to grow and develop. However, as with any new approach to conventional methods there exists some resistance to change. Communities seek to be involved in the changes that most affect them; as such it is only natural that they voice their concerns.

Concerns

Community Stakeholders: Business owners in the downtowns and commercial districts have traditionally viewed parking as the lifeline which keeps them in business, residents want to be assured that their residential parking is preserved and not subject to spill over by patrons visiting the commercial districts and developers feel that meeting parking requirements is one of the major stumbling blocks to project approval and therefore seek the easiest and most cost-effective way of accomplishing this. Stakeholders view smart growth policies as radical changes that threaten their comfort and look to take away their valuable parking. In reality, smart growth policies seek to do the opposite by promoting increased efficient use of parking. For businesses short time-limits and high-turnover translates into increased patron visits, for residents parking policies help protect the residential characters of their neighborhoods and limit the amount of parkers from outside the neighborhood, for developers smart growth parking policies provide options for meeting requirements and facilitate the development process.

Land Use: The traditional view towards parking has been that it is an assumed provision of new development as tenants need to be guaranteed parking. Smart growth parking policies present an alternative approach to land use as they seek to reduce the impact of parking on land by providing less of it. As a set of policies that are in their infancy stages, the changes they propose disrupt the comfort level established by more traditional policies because they are new and unknown. Despite these perceptions, smart growth policies can help to promote more efficient land use through higher density development. The City of Mountain View uses its established Transit Overlay Zone that allows increases to the floor area ratios of for office and R&D uses in exchange for transit oriented improvements (e.g. reduced parking requirements).

Economics: Parking has been traditionally viewed by many as a public good that all are entitled to and therefore holds an inherent value. Cities, developers, and residents alike have paid for parking through a variety of means: direct financing, development fees, and higher taxes. Smart growth parking policies provide new ways of thinking about parking financing by offering these groups payment options. Through such means as the "unbundling" of parking, the costs of parking are separated from the price of development, thereby providing people with alternative travel options. While new parking policies provide options for people they are also viewed as a means of taking people's (perceived) public good away. However, the benefits of such policies are illustrated in the following example. A downtown office can unbundle the costs of parking from its leases so that commuters would no longer be required to buy the parking provided by the office. As such, commuters would be free to compare the price of a monthly transit pass (e.g. $50) to that of a monthly parking permit (e.g. $150) and would be more likely to change their mode of travel.

Institutional Requirements: Parking requirements have long been based on established zoning codes and regulations that seek to advance the developmental goals of the City as a whole. Smart growth parking policies seek to revise and propose the use of new methodologies for instituting parking requirements. As such, these policies challenge the established tradition and create concern among cities because they are new and the extent of their applicability is unknown. San Francisco's establishment of a parking maximum in the City's Mission Bay district is one such example whereby old parking requirements were replaced by a maximum parking of 1 space per unit, effectively placing a cap on the amount of parking that could be provided by developers.

Political Will: Politicians take risks when they support new initiatives and generally will not do so unless they are assured full support by their constituents. Smart growth parking policies tend to affect the price and supply of parking. Typically, politicians tend to distances themselves from policies that are highly controversial and therefore pose a significant obstacle to the institution of smart growth policies. For example, a politician running for re-election will deliberately ignore issues relating to the controversial policy and instead look address other issues that present themselves to be most important to the majority of voters.

Testing of New Policies: As with any new process, the implementation of smart growth policies will naturally be met with some degree of skepticism and generate questions about their

applicability and potential degree of success. Smart growth policies present innovative ways of addressing traditional parking problems. For example, city's traditionally use parking meters with time limits to promote high turnover in busy downtowns and commercial areas. However, the rigidity of these traditional meters make the efficient use of the existing parking supply difficult because they cause parkers anxiety in having to rush to their cars in order to avoid parking tickets and bear the inconvenience of having to carry multiple coins. City's who have taken the risk in implementing smart parking initiatives include Redwood City who now uses electronic meters which have flexible charging and lack time limits. As such, the charge for parking can be adjusted during a particular part of the day for areas with higher demand at peak hours and the payment transaction can be completed with credit and debit cards or the user may be billed.

Addressing the Concerns

Community Stakeholders: In order for a new policy or program to move forward one or more stakeholder groups need to become active proponents of the action and their efforts must focus on gaining the backing and support of the other parties. Active opposition from just one group can be enough to kill the proposal. While many initiatives start through an interest by City or other agency staff in effecting change, it is highly unlikely that any change will occur without a group of proponents other than City staff stepping forward. One key step cities have taken toward ensuring that policy implementation is increasingly viewed as equitable has been including a strong community outreach component as part of their process. By creating opportunities for dialogue with the community through public meetings, community workshops, focus groups, and the like, City Staff actively seek to include all stakeholders in the development of the parking policies. Through these efforts, the City demonstrates its commitment to the people they serve by keeping them abreast of the proposed development changes and involving them as much as possible.

Land Use: At a time when land is becoming an increasingly scarce resource, cities need policies that help promote its preservation and efficient use. With respect to older established core commercial and residential districts which tend to be limited in their willingness to change, smart growth policies can act as the catalyst that promotes new development. As cities adopt measures that take into consideration the linkages between land use and transportation, smart growth policies promote a holistic view of development by taking a close look at the interactions between the different elements and

Economics: The public has come to take parking for granted and the fact that 99 percent of parking is provided free of charge has only helped to reinforce that fact. Therefore, people view any change to parking as a revoking of a public good which they are entitled to. The reality of the matter is that no parking is free *per se* because the cost of parking is bundled (passed down) to someone through some means whether it is through higher rents, higher priced goods and services, etc. For example, a 1997 study conducted by Wenyu Jia and Martin Wachs quantified the exact price effects of parking in new developments in several representative San Francisco neighborhoods and found that the availability of a parking space accounted for 13 percent of the

price of a condominium and 11.8 percent of the price of a single-family dwelling unit[16]. By separating out the costs of parking the public is then made aware of the implications parking has for them as individuals. Based on this information they can then choose among the alternatives.

Institutional Requirements: While changes in the ways parking is managed are often perceived as extreme by local communities, the proposed parking policies need not be implemented for the City as a whole but rather as specific and tailored measures to those areas which experience unusually high-demand for parking, notably the core downtown, commercial/retail areas, and established parking districts. As such, the prospect of implementing new parking policies will be viewed as less intimidating if the public is made aware of their breadth and scope.

Political Will: It is evident that in order to gain the support necessary to implement a policy or program, it must be politically desirable to do so. Therefore, any political opposition translates into a defeat. As such, it is important to communicate and coordinate policy efforts with a key political figure that has vested interests in advancing these types of issues and as such will act as a main source of support to realize smart growth objectives.

Testing of New Policies: To overcome the skepticism associated with new policies, an initial testing will have to take place at selected sites. Jurisdictions may be offered incentives such as funding for special projects or subsidies for the participating locations. By offering creative ways to get cities involved in the effort to promote smart growth, two outcomes will be achieved: 1) cities will learn how to effectively manage parking to promote the equitable growth and development and 2) the overall benefit will be gained through the lessons learned in the process of policy implementation and applicability to similar contexts.

[16] Donald C. Shoup, "The Trouble with Minimum Parking Requirements," *Transportation Research Part A*; Vol. 33: 1999; 558.